EyePhone™ LX

VPL

Key Features

- Adjustable Head-Mount
- Color System
- Wide Angle FMT Optics
- Standard Interfaces (RS-232, RS-422)
- NTSC Video Signals
- Head Motion Tracking
- Studio Quality Audio Headphones

Description

The EyePhone LX is a color stereo-display system mounted on the head of the user. The stereo image is displayed through wide angle FMT Optics™ by two liquid crystal LCD screens, (one for each eye.) Each of the color LCDs contain about 105,000 color pixel elements. The EyePhone is opaque: only the image displayed by the system is visible, not the surrounding physical environment.

A new lightweight form fitting headmount system allows the user to easily and comfortably wear the EyePhone. The EyePhone also contains a Polhemus Isotrak® System which tracks the head's position and orientation.

The EyePhone Control Unit provides standard RS-232 and RS-422 serial interfaces and accepts NTSC format video signals from the host computer or other dual video sources.

The EyePhone was developed for use in virtual reality. VPL's RB2 Virtual Reality System uses the head tracking information to compute stereo view perspectives for each of the two displays, updating them in real-time.

Key Features

Adjustable Head-Mount

The new headmount's stability, balance, and adjustable fit give the EyePhone LX a new level of ease of use, comfort, and low-facial contact.

Color System

The EyePhone contains two separate high resolution color LCD displays.

Wide Angle FMT Optics

The EyePhone LX utilizes FMT Optics developed by VPL to display a wide, 108° field of view. The FMT Optics feature Fresnel lenses that are lighter and offer less geometric distortion than previous optics. A proprietary diffusion element reduces the apparent granularity of the LCD displays.

Standard Interfaces (RS-232, RS-422)

The EyePhone supports interfaces to any host computer system via RS-232 or RS-422 serial communications for head position and angle sensing.

NTSC Video Signals

Inputs to the right and left displays of the EyePhone are standard NTSC video signals.

Head Motion Tracking

A Polhemus 3Space® Isotrak® system measures head motion in 6 degrees of freedom. An Isotrak sensor mounted on top of the EyePhone uses a magnetic detection system to determine the head's position (X, Y, and Z) and orientation (Yaw, Pitch, and Roll.)

Studio Quality Audio Headphones

The EyePhone comfortably provides a pair of studio quality headphones for audio virtual reality applications such as VPL's AudioSphere™.

Specifications

Weight

Goggles & Headmount	2.5 lbs

Field of View

Horizontal - per Eye	86°
Horizontal - Both Eyes	108°
Vertical	76°

Resolution per Eye

(primary colored pixels)	442 x 238

Tracking Accuracy

Position	0.13 inches RMS (to 15 “)
	0.25 inches RMS (at 30")
Orientation	0.85 degrees RMS (to 30")

Video Inputs

Left and Right Input NTSC Video Signals

User Controls

Adjustable brightness, color and tint for left and right displays.

Data Communications interface

RS-232 & RS-422 (user selectable from 300 to 19,200 baud)

Data Transfer Rate

30/sec, 60/sec

Data Acquisition Rate

60 times per second

Operating Temperature

10° C to 50° C at relative humidity of 10% to 80% noncondensing (Note: User comfort should be considered in planning operating temperature ranges)

Operating Environment

The six degree of free tracking system should not be used in the presence of metallic objects or strong electromagnetic fields.

Power Requirements

110 VAC, 50-60 Hz. 50 Watts

Line Fuse

2A, 250V Fast Blow

VPL

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Specifications subject to change without notice.

Domestic Version